

## CLAIMS

1. A volumetric metering device for the metered delivery of granular and powdery materials, particularly for machines for distributing the said materials, comprising a housing (10) and a metering member (20) supported rotatably in the housing, characterized in that the housing is formed in a single piece.  
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2. A device according to Claim 1 in which the housing (10) is moulded of plastics material.
3. A volumetric metering device for the metered delivery of granular and powdery materials, particularly for machines for distributing the said materials, comprising a housing (10) and a metering member (20) supported rotatably in the housing, characterized in that the metering member (20) comprises at least one metering wheel (26) clamped between a pair of flanges (27), the housing comprising juxtaposed openings (18) at least one of which has dimensions such as to allow the metering member, complete with the at least one wheel (26) and the flanges, to pass from and towards the housing, at least one of the flanges being arranged to close the respective opening when the metering member is fitted in the operative position in the housing, and constituting means for the rotatable support of the metering member in the housing.  
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4. A device according to Claim 3 in which both of the openings (18) have dimensions such as to allow the metering member (20), complete with the at least one wheel (26) and the flanges (27), to pass from and towards the housing, both of the flanges being arranged to close the respective openings when the metering member is fitted in the operative position in the housing, and constituting means for the rotatable support of the metering member in the housing.  
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5. A device according to Claim 3 or Claim 4 in which the flanges (27) carry peripherally at least two rolling tracks (29a, 29b) for at least one bearing or wheel (30a, 30b, 30c), a shoulder being defined between the tracks, and the at least one bearing or wheel being restrained on the housing (10) for the rotatable support of the metering member (20) and for the axial restraint thereof, by means of the shoulder.  
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6. A device according to Claim 5 in which at least one of the bearings or wheels (30a) is removable from the housing to allow the metering member to be moved away from and towards the housing.

7. A volumetric metering device for the metered delivery of granular and powdery materials, particularly for machines for distributing the said materials, comprising a metering member (20), characterized in that the metering member includes a plurality of metering wheels (26) which are structurally independent of one another and are interposed in a group between a pair of flanges (27), and a shaft (21) acting as a tie between the flanges in order to clamp in a group the flanges and the metering wheels interposed between them, to constitute a unit which can be handled individually.

8. A device according to Claim 7 in which the shaft (21) comprises, at one of its ends, a joint (22) for connection to a drive shaft.

9. A device according to Claim 7 or Claim 8 in which the shaft (21) has means for clamping the group of flanges and wheels at the end remote from the joint (22), the joint (22) acting as an abutment shoulder for the clamping.

10. A device according to any one of Claims 7, 8 and 9, in which the shaft (21) has a polygonal cross-section.

11. A device according to Claim 10 in which each of the metering wheels (26) has a hub (37) having a hole (37a) of polygonal cross-section which can be coupled with the polygonal cross-section of the shaft.

12. A device according to Claim 11 in which the holes (37a) in the hubs of the metering wheels have channelled profiles in which the channels have profiles which can be coupled with the profile of the shaft (21) and the number of channels is a multiple of the number of sides of the shaft so as to permit various angular positionings of the metering wheels on the shaft.

13. A volumetric metering device for the metered delivery of granular and powdery materials, particularly for machines for distributing the said materials, comprising a metering member (20) carrying a plurality of metering wheels (26) having blades (36) and clamped together in a group, characterized in that the blades have appendages (38) by means of which the blades of one wheel are restrained on the blades of the adjacent wheel.

14. A device according to Claim 13 in which a disc (28) having holes (39) for the appendages (38) is interposed between adjacent metering wheels (26), the disc (28) constituting an interconnection element between the blades (36) of adjacent wheels.

15. A device according to Claim 14 in which the disc (28) has seats (39) for the appendages (38), the seats being offset relative to one another to permit an angularly offset interconnection of the sets of blades of adjacent wheels.

16. A device according to one or more of Claims 3 to 15 in which the  
5 wheels (26) can be interchanged and/or combined with wheels of different dimensions (26a, 40).

17. A volumetric metering device for the metered delivery of granular and powdery materials, particularly for machines for distributing the said materials, comprising a metering member (20) with metering wheels (40) clamped in a group  
10 and keyed to a common drive-transmission shaft (21), characterized in that selective drive-transmission means (41) are interposed between the wheels and the shaft in order to exclude the wheels from driving by the shaft or, conversely, to connect the wheels for driving by the shaft.

18. A device according to Claim 17 in which the wheels (40) are mounted  
15 reversibly on the shaft (21) and the selective drive-transmission means comprise a release mechanism (41) which brings about the driving connection between wheels and shaft in a first mounting condition and disconnection between wheels and shaft in a second mounting condition, in which the wheels are turned through 180° relative to the first condition.

19. A device according to Claim 17 or Claim 18 in which scraper means  
20 (50) are provided, and are active on the wheels (40) individually to remove deposits therefrom.

20. A device according to Claim 19 in which the scraper means comprise a plurality of resilient bows (51) each active on the respective wheel (40)  
25 individually.

21. A device according to Claim 19 or Claim 20 in which the scraper means (50) are movable relative to the metering member (20) between an operative position in which they are active on the wheels (40) and an inoperative position in which they are spaced therefrom.

22. A device according to one or more of Claims 17 to 21 in which the  
30 scraper means (50) and the wheels (40) comprise mutual engagement means (52, 54) for restraining the wheels in a stationary position when they are excluded from driving by the shaft.

23. A device according to Claim 22 in which the mutual engagement means comprise a crosspiece (52) on each scraper (51) and at least one tooth-like element (54) on each wheel, the tooth-like element defining a leading face which can engage the crosspiece when the wheel is oriented in the second mounting condition and defining an inclined rear face (55) which can slide relative to the crosspiece when the wheel is oriented in the first mounting condition.

24. A volumetric metering device for the metered delivery of granular and powdery materials, particularly for machines for distributing the said materials, comprising a housing (10), a metering member (20) supported rotatably in the housing, and a feeler device (16) mounted in the housing and active in the manner of a scraper blade with a lip (67) thereof operative on the metering member, characterized in that restraining means (63) active on the feeler device in order to keep it a predetermined distance from the metering member, and resilient preloading means (64) active on the feeler device in order to press its operative lip towards the metering member with predetermined preloading, are provided.

25. A device according to Claim 24 in which the feeler device comprises a plurality of feeler elements (60) active individually and independently on respective corresponding metering wheels (26) of the metering member (20).

26. A device according to Claim 25 in which the feeler elements (60) are articulated pivotably by their respective ends remote from the operative lip (67) on a shaft (61) fixed to the housing (10), and means are provided for limiting their pivoting relative to the shaft.

27. A device according to Claim 26 in which the means for limiting pivoting comprise, at the end corresponding to the operative lip, a fork-shaped element (62) between the prongs of which a second shaft (63) is housed with predetermined clearance.

28. A volumetric metering device for the metered delivery of granular and powdery materials, particularly for machines for distributing the said materials, comprising a housing (10), a metering member (20) supported rotatably in the housing, and a feeler device (16) mounted in the housing and active in the manner of a scraper blade with a lip (67) thereof operative on the metering member, characterized in that it comprises means for altering locally the angle of

introduction between the feeler device (16) and the metering member, the means being associated with the feeler device, immediately upstream of the operative lip.

29. A device according to Claim 28 in which the feeler device comprises a plurality of feeler elements (60) active individually and independently on respective  
5 corresponding metering wheels (26) and the means for altering the angle of introduction comprise a plurality of separators (68) interposed between the feeler elements and each having a nib (69) projecting towards the metering device.

30. A device according to one or more of the preceding claims in which first flow-separator means (70) are provided, disposed in the region of an output  
10 opening (15) from the housing (10).

31. A device according to Claim 30 in which the first separator means are of the type comprising a fixed plate (70) supported, by means of notches (71), on shafts (72, 73) extending between side walls (17) defined in the housing, the plate having, on the side facing the metering member (20), an arcuate profile (74)  
15 complementary with the outer surface of a toothless wheel (75) which is fitted centrally between the metering wheels (26).

32. A device according to Claim 30 or Claim 31 in which second separator means (76) are disposed in the housing (10) upstream of the metering member so as to separate products, which may optionally be different, at the input.

20 33. A device according to Claim 32 in which the second separator means comprise a fixed plate (76) provided with an arcuate profile (77) complementary with the surface of the toothless wheel (75).